

REMARKS

Applicant's counsel thanks the Examiner for the careful consideration given the application. The Title has been amended as requested by the Examiner. The claims have been amended to more clearly define the invented subject matter; no new matter has been added.

At the bottom of page 3 of the Office action, the Examiner has noted that the invention employs a specific strain of *P. pentosaceus* designated FBB63. The Examiner requests clarification that the starting materials were readily available to the public at the time of the invention. It is noted that *P. pentosaceus* FBB63 was formerly known as *P. cerevisiae* FBB63. This bacterial strain is mentioned in many scientific articles and patents which are easily available on the Internet. For example, this bacterial strain is mentioned in the following patents: US 4883673; US 4929445; US 5175252; US 5260212; US 5445835; EP 0445414. Applicant is also attaching hereto the first page of Folia Microbiol., Vol. 41, No. 4, Pages 333-338 (1996), which states four lines from the bottom that *Pediococcus pentosaceus* FBB63 is available from one or more culture collections. Accordingly, it is clear that the starting materials were readily available to the public at the time of the invention and that the written description is sufficiently repeatable to avoid the need for a deposit.

It is clear that claim 20 as now presented defines over the prior art cited in the Office action. The principal reference relied upon is Piva, et al. (1995). The Office action states that Piva, et al. (1995) teaches the treatment of caecal contents of a monogastric animal with a combination of *Pediococcus pentosaceus* ATCC 43200 and pediocin A. However, this is not correct because throughout the Piva 1995 reference, the use of pediocin A alone or in combination with *Pediococcus pentosaceus* ATCC 43200 is never disclosed or suggested. This is clear from a careful reading of Piva 1995. At page 616, Piva 1995, paragraph **Strains and media**, *Pediococcus pentosaceus* FBB61 (ATCC 43200) and *Pediococcus pentosaceus* FBB61-2 were grown in a medium (that does not contain pediocin A) for one night. After this fermentation period, fresh overnight cultures were obtained, harvested, washed and dispensed in fermentation vessel to provide 10^5 cfu/ml. As can be seen, no pediocin A was voluntarily added to the cultures. The pediocin A eventually produced by *Pediococcus pentosaceus* FBB61 (ATCC 43200) and *Pediococcus pentosaceus* FBB61-2 during the fermentation period (one night), if any, was washed out by the washing. The conclusion to be drawn is that no pediocin A is present in the above cultures.

At page 617 of Piva 1995, paragraph *In vitro caecal fermentation*, caecal contents were collected before a meal, diluted with buffer, dispensed into each vessel where 200 mg of pre-digested feed had been previously weighed. Therefore, no pediocin A was added to said vessel. Afterwards, 9 vessels were used as control (C); 9 vessels received 10^5 cfu/ml of *Pediococcus pentosaceus* FBB61-2 (bac -), and 9 vessels received the same amount of *Pediococcus pentosaceus* FBB61 (bac +). It is noted that the above cultures of *Pediococcus pentosaceus* FBB61-2 and *Pediococcus pentosaceus* FBB61 were those prepared according to Strains and media discussed above. Then, all the above 27 vessels were incubated at 39°C for 24, 48 and 72 hours. The conclusion which must be drawn is that no pediocin A is separately added in combination with *Pediococcus pentosaceus* FBB61-2 and *Pediococcus pentosaceus* FBB61 (ATCC 43200).

For the sake of completeness, at page 619, right column, lines 2-5, it is reported that every discrepancy in fermentation chemical parameters between treatment bac - (not producing pediocin A) and bac + (producing pediocin A) appears to be related to the production of this bacteriocin, during the incubation. But, again, no pediocin A is added.

Therefore, contrary to what is presented in the Office action, the Piva 1995 reference does not disclose or suggest the use of pediocin A in combination with *Pediococcus pentosaceus* FBB61 (ATCC 43200). Claim 20 as now amended clearly requires that pediocin A be present in the composition separately and independently from the bacterial strain. Since the reference does not teach or suggest the bacterial strain being present independently of the pediocin A, claim 20 clearly defines over and is free of the prior art.

CLAIM 28-PREVENTION OF CLOSTRIDIUM PERFRINGENS INFECTIONS- PIVA 1994

At the bottom of page 5 of the Office action, it is acknowledged that Piva 1995 does not teach or suggest the prevention of *C. perfringens* infections. However, the Office action states that Piva 1994 discloses the beneficial effects of at least pediocin A in inhibiting certain *Clostridium* (see, e.g., at Table 2). As general knowledge, it is known that all *Clostridium* are gram-positive and sporogenic (spore producing). Table 2, of Piva 1994, discloses *C. sporogenes* C22/10, *C. tyrobutyricum* 3.5 and *C. tyrobutyricum* NCDO 1754 which are not pathogenic because they are used for making dairy products. Further, they do not produce toxins and we do not have any evidence, up to now, that they are present in intestinal tract. On the contrary, *C. perfringens* are

pathogenic. Further, Table 2, discloses specific *Clostridium* strains which belong to a different specie than "*perfringens*". In other words, Table 2 does not disclose or suggest the use of pediocin A against *C. perfringens*. At page 700 of Piva 1994, column 1, paragraph **Discussion**, it is confirmed that the antimicrobial agent produced by *P. pentosaceus* FBB61 (ATCC 43200), pediocin A, is a bacteriocin, and pediocin A had a broad spectrum of bactericidal activity against almost all Gram-positive strains tested. But, all these latter strains tested are not pathogenic because they are used for food preservatives and for making dairy products. For these reasons it is not reasonably predictable that pediocin A will work against *C. perfringens*. The third reference, Mishra, in Table 2, does not disclose anything more than what is mentioned in Piva 1994.

In summary, Piva 1995 does not disclose a composition wherein pediocin A and the bacterial strain are separately added. Accordingly, Piva 1995 does not teach claim 20 as now presented, which requires a composition wherein pediocin A and the bacterial strain are independently added. Meanwhile, the second reference, Piva 1994, does not disclose anything about *Clostridium perfringens*, and one of ordinary skill in the art would not reasonably expect this strain to be sensitive to pediocin A since the strains mentioned in Piva 1994 are not pathogenic (they are used for making dairy products), they do not produce toxins and we do not have any evidence that they are present in the intestinal tract. For all the foregoing reasons, the claims as now presented are not taught or suggested or rendered obvious by the cited prior art and are accordingly in condition for allowance, which is respectfully requested.

Along with the July 7, 2009 Office action, the Examiner returned an initialed copy of Applicant's form PTO-1449. On that Form PTO-1449, five references were lined through, with the explanation "no copies". All these references were cited in the International Search Report and accordingly, the International Bureau sent copies to the USPTO. Apparently, those copies were lost or misplaced. So that the Examiner can consider these references, Applicant is enclosing a clean copy of said PTO Form 1449, along with copies of four of the references (the Piva 1994 reference is not enclosed, since it was cited independently by the Examiner on Form PTO-892). Applicant requests that the four references be considered and that an initialed copy of the Form PTO 1449 be enclosed with the next communication.

If any additional fees are required by this communication, please charge such fees to our
Deposit Account No. 16-0820, Order No. HOFF-38826.

Respectfully submitted,
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